



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,738	12/11/2003	David B. Allen	2003P14124US	8398

7590 06/06/2005

Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
Iselin, NJ 08830

EXAMINER

MCNEIL, JENNIFER C

ART UNIT PAPER NUMBER

1775

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/733,738	Applicant(s) ALLEN, DAVID B.	
	Examiner Jennifer C. McNeil	Art Unit 1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1775

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Schaefer et al (US 4,735,656). Schaefer teaches an abrasive material for turbine blade tips. The abrasive material comprises a MCrAlY matrix with ceramic particulate dispersed therein. The ceramic particulate may be a mixture of ceramics such as boron nitride and silicon nitride (col. 6, lines 54-69).

Claims 1, 3, 4, 6, 7, 9, 10, 12, and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Torigoe et al (US 2004/0208749). Torigoe teaches an abrasive coating applied to a turbine blade tip comprising a matrix of MCrAlY and hard particles embedded therein. The MCrAlY may comprise Co and Ni. The abrasive particles may be a mixture of particles such as

Art Unit: 1775

cBN and silicon nitride (paragraphs 9 and 56). Regarding claim 7, Torigoe teaches that the tip portion of the ring segment is generally formed of zirconia (paragraph 6).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaefer et al (US 4,735,656). Schaefer teaches an abrasive tip material as discussed above, but does not specifically teach the amounts of ceramic particles to be added. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use amounts of SiN and cBN that provide the desired abrasiveness to the coating, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233). SiN and cBN have known values of hardness; therefore one of ordinary skill would have found it obvious to vary the amounts to achieve the desired abrasive quality in the coating.

Claims 2, 5, 8, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Torigoe et al (US 2004/0208749). Torigoe teaches an abrasive tip material as discussed above, but does not specifically teach the amounts of ceramic particles to be added. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use amounts of SiN and cBN that provide the desired abrasiveness to the coating, since it has been

Art Unit: 1775

held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233).

SiN and cBN have known values of hardness; therefore one of ordinary skill would have found it obvious to vary the amounts to achieve the desired abrasive quality in the coating.

Claims 4, 7-12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaefer et al (US 4,735,656) in view of Torigoe et al (US 2004/0208749). Schaefer teaches an abrasive coating for a blade tip as discussed above, but does not teach additional compositions of MCrAlY or specifics of the ring segment with which the tip comes into contact. Torigoe teaches an abrasive blade tip coating, also discussed above, similar to that of Schaefer, in that the matrix is MCrAlY, and may contain a mixture of particles including cBN and SiN. Torigoe also teaches that the MCrAlY may comprise both Ni and Co and that the ring segment has a tip of zirconia. One of ordinary skill in the art would have found it obvious to use alternative compositions of MCrAlY as taught by Torigoe in the article of Schaefer, as it is clearly demonstrated to be used successfully in combination with similar ceramic particles and in a similar environment. Furthermore, one of ordinary skill in the art would have found it obvious to use the abrasive tip of Schaefer with a ring segment like that taught by Torigoe, as it is clearly taught to be a generally common coating for ring segments and is used in conjunction with a similar abradable coating. Regarding claim 11, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use amounts of SiN and cBN that provide the desired abrasiveness to the coating, since it has been held that where the general

Art Unit: 1775

conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233). SiN and cBN have known values of hardness; therefore one of ordinary skill would have found it obvious to vary the amounts to achieve the desired abrasive quality in the coating.

Claims 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Torigoe et al (US 2004/0208749) in view of Xia (US 6,670,046). Torigoe teaches an abradable coating for a ring segment comprising zirconia, as discussed above, but does not give a specific composition value. Xia teaches an abradable coating for turbine rings which are to come into contact with turbine blade tips. The coating comprises zirconia stabilized with 8 wt% yttria (col. 4, lines 5-10). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a zirconia composition as taught by Xia as the coating for the ring segment of Torigoe as it is clearly taught to a successful zirconia composition used as a coating for a ring segment.

Claims 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaefer et al (US 4,735,656) in view of Torigoe et al (US 2004/0208749) and further in view of Xia (US 6,670,046). As stated above, one of ordinary skill in the art would have found it obvious to use alternative compositions of MCrAlY as taught by Torigoe in the article of Schaefer, as it is clearly demonstrated to be used successfully in combination with similar ceramic particles and in a similar environment, and furthermore, one of ordinary skill in the art would have found it obvious to use the abrasive tip of Schaefer with a ring segment like that taught by Torigoe, as it

Art Unit: 1775

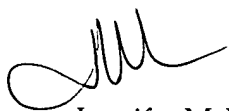
is clearly taught to be a generally common coating for ring segments and is used in conjunction with a similar abradable coating. Regarding the type of zirconia that may be coated on the ring segment of Torigoe, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a zirconia composition as taught by Xia as the coating for the ring segment of Torigoe as it is clearly taught to a successful zirconia composition used as a coating for a ring segment.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer C. McNeil whose telephone number is 571-272-1540. The examiner can normally be reached on 9AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jennifer McNeil
May 27, 2005